
CTSW-OT-06-137.17.7
Caltrans

BEFORE WE START

- PLEASE SET YOUR PAGERS AND CELL PHONES ON VIBRATE
  - * # 9 ALL
- CLASS CHARGE CODES
  - AUTHORIZATION
    - 912076
  - SPECIAL DESIGNATION
    - G0C001
  - ACTIVITY
    - 2059

Construction Academy (AKA “Boot Camp”)

Caltrans

Construction Academy Curriculum

Introduction	Introduction, Vision, Mission, Goals
Implementation	Reporting Contractor's Activities Control of Materials Entering the Work Preparation of Pay Documents
Interaction	Human Relations Administrative Issues
Investigation	Environmental Issues Safety Issues

Introductions

- Name, work location, and position
- What environmental issue have you been involved with lately?

Environmental Issues

- Objectives
- Water Pollution Control
- Other Environmental Issues
- Archeological Site
- Summary

Objectives

- The participant will learn:
  - How to identify environmental issues
  - Correct and Incorrect BMP Installations
  - Understand the environmental requirements, policies, and laws that pertain to Caltrans Construction activities

Section 1:
Water Pollution Control

Glossary

- **BMP** - Best Management Practice
- **CPD** – Construction Procedure Directive
- **CSWC** – Construction Storm Water Coordinator
- **EPA** - Environmental Protection Agency
- **NPDES** - National Pollutant Discharge Elimination System
- **NRDC** -Natural Resources Defense Council
- **RWQCB** - Regional Water Quality Control Board

Glossary

- **SAP** – Sampling and Analysis Plan
- **WPCP** - Water Pollution Control Program
- **SWMP** - Storm Water Management Plan
- **SWPPP** - Storm Water Pollution Prevention Plan
- **SWRCB** - State Water Resources Control Board
- **SWTF** - Storm Water Task Force

Introduction

- What are the two primary factors that impact waters adjacent to construction sites?
  - Visible Pollutants: Sediment, PCC, Petroleum
  - Non-Visible Pollutants: Solvents, Acids, Fertilizers

Introduction

Construction Site Pollutants

Erosion and Sedimentation

Construction Wastes

Introduction

- One gallon of oil has the potential to contaminate up to one million gallons of water

StormWater/CleanWater protection program

Introduction

- Forty percent of all U.S. waters are not fishable or swimmable, according to the U.S. EPA

- "Even a partial accounting shows that hundreds of millions of dollars are lost each year….due to urban stormwater pollution"

Natural Resources Defense Council

Introduction

- Sediment, the most common pollutant washed from construction sites, clogs the gills of fish, blocks light transmission and increases ocean water temperature …..harming aquatic life, and disturbing the food chain

Introduction

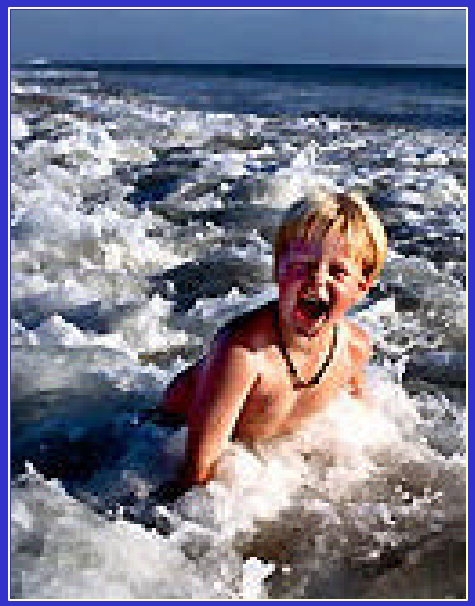
- Construction site erosion can be 10 to 1,000 times greater than nature's erosion process

  Ohio Department of Transportation

Introduction

Construction Site Water Pollution Prevention helps to

- Minimize the Potential Impact that Construction Activities may have on Water Bodies and Protect their Beneficial Uses for Future Generations



The Laws

- 1972 Federal Clean Water Act (CWA)
  - Amend to Prohibit Any Discharge of Pollutants from a Point Source, NPDES
- 1987 Amendments to the CWA
  - Added Section 402(p) Establishing the Framework for Regulations Regarding Municipal and Industrial Discharges
- 1990 EPA Published Final Regulations
  - Established Permit Requirements for Storm Water Discharges Associated with Industrial (Including Construction) Activities
- 1992 California's General Permit was Adopted
  - Established Requirements for Discharges Associated with Construction Activities
  - Revised in 1999; Modified in 2001 to Include Monitoring
  - Modified in 2002: Effective March 10, 2003 Construction Activity with Soil Disturbance of 1 Acre or More Requires Coverage
- 1999 Caltrans NPDES Permit was issued –03 Permit
- California's Porter Cologne Water Quality Control Act
- Local MS4 Permits (SWMP)
- 2005 Lake Tahoe Hydrologic Unit Permit
  - = 1 acres of soil disturbance

The Laws

- General Construction Permit CAS000002 - The ‘02 permit
- Caltrans NPDES Permit CAS000003 - The ‘03 permit

  - The 02 Permit was amended in 2001 to include water quality monitoring
  - The 03 Permit requires that Caltrans’ construction program complies with the General Construction Activity Permit for construction sites that disturb (1) acre or more
  - Both permits can be viewed and downloaded from the State Water Resources Control Board website, www.swrcb.ca.gov

The Law

- Discharge of polluted storm water, into waters of the U.S. is prohibited

- The National Pollutant Discharge Elimination System (NPDES) permit regulate discharges to waters of the U.S.

Who Enforces These Laws?

- EPA
- SWRCB / RWQCB
- Other Agencies

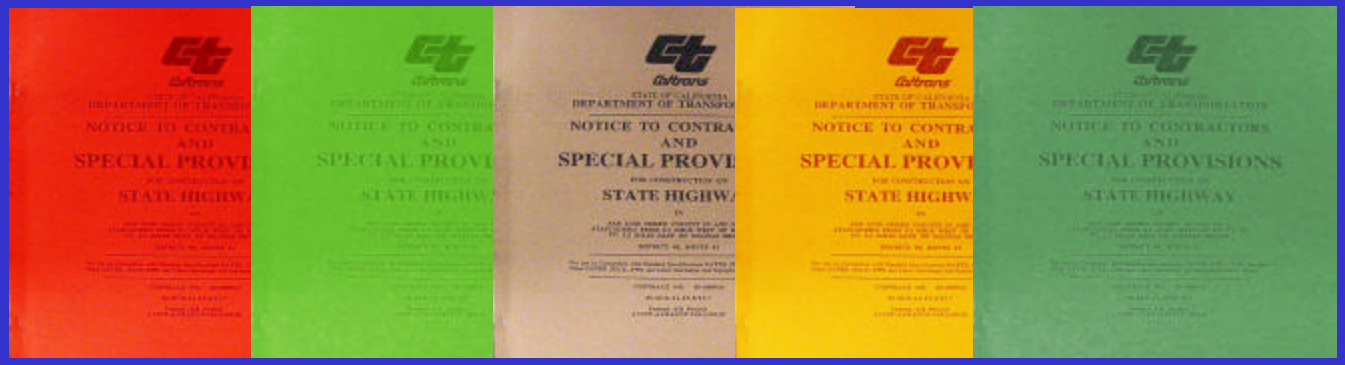
- **Private Citizens**
  - NRDC
  - Baykeepers
  - Other Watchdog
  - Groups

What If We Don't Comply?

- Fines to $32,500 Per Day – Per CWA
- Fines to $15,000 Per Day and $20 a gallon – Per Porter Cologne Act
- Current Regulatory Atmosphere
  - Violators will be held accountable

Contract Special Provisions

- **Contract Special Provisions - Section 10**
  - Requires compliance with the NPDES Permit requirements
  - Requires the use of Caltrans Storm Water Quality Handbooks
  - Defines water pollution control requirements



Manuals

- Caltrans Storm Water Quality Handbooks
  - Project Planning and Design Guide
  - SWPPP / WPCP Preparation Manual
  - Construction Site BMPs Manual
    - **Get Manuals online at http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm or hard copies are available from Caltrans Publications**
- Construction Manual
- Construction Site BMP Field Manual and Troubleshooting Guide
- Dewatering Guide
- Guidance for Temporary Soil Stabilization

Construction Site Best Management Practices - BMPs

Objectives:

- ☒ Promote Good Housekeeping
- ☒ Contain Waste
- ☒ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas

Construction Site Best Management Practices - BMPs

Objectives:

- ☒ Protect Slopes and Channels
- ☒ Control Site Perimeter
- ☒ Control Internal Erosion

Construction Site Best Management Practices - BMPs

- BMP defined – a technique, measure or structural control that is used for a given set of conditions to manage the quantity and improve the quality of storm water runoff in the most cost-effective manner
- Sometimes referred to as temporary control practices

BMP Installation

BMP Categories

- Temporary Soil Stabilization
- Temporary Sediment Control
- Wind Erosion Control
- Tracking Control
- Non-Storm Water Management
- Waste Management and Materials Pollution Control

Temporary Soil Stabilization

ID	BMP Name
SS-1	Scheduling
SS-2	Preservation of Existing Vegetation
SS-3	Hydraulic Mulch
SS-4	Hydroseeding
SS-5	Soil Binders
SS-6	Straw Mulch

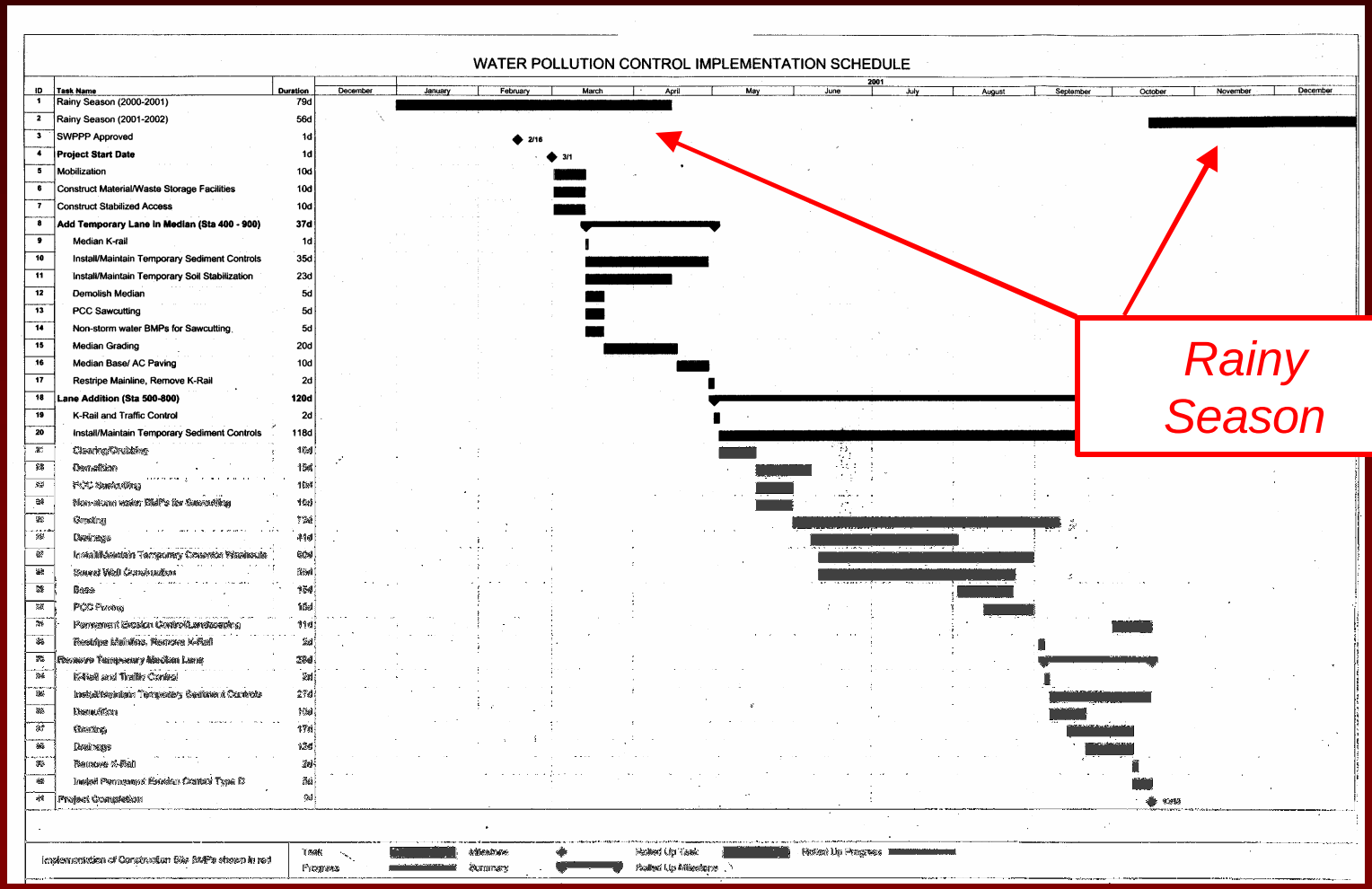
Temporary Soil Stabilization

ID	BMP Name
SS-7	Geotextiles, Plastic Covers, & Erosion Control Blankets/Mats
SS-8	Wood Mulching
SS-9	Earth Dikes/Drainage Swales & Lined Ditches
SS-10	Outlet Protection/Velocity Dissipation Devices
SS-11	Slope Drains
SS-12	Streambank Stabilization

BMP Use - Soil Stabilization

SS-1 Scheduling

Example of Graphical Schedule



BMP Installation - Soil Stabilization

SS-3 Hydraulic Mulch

Hydraulically applied paper mulch

Caltrans Requirements

- Mulch must be approved by RE or CSWC
- Prior to application, roughen embankment and fill areas
- Hydraulic matrices need 24 hours to dry before rainfall occurs to be effective unless approved by the RE
- Application rates per SS-3

Temporary Sediment Control

ID	BMP Name
SC-1	Silt Fence
SC-2	Sediment / Desilting Basin
SC-3	Sediment Trap
SC-4	Check Dam
SC-5	Fiber Rolls
SC-6	Gravel Bag Berm
SC-7	Street Sweeping and Vacuuming
SC-8	Sandbag Barrier
SC-9	Straw Bale Barrier
SC-10	Storm Drain Inlet Protection

BMP Installation - Sediment Controls

Sediment Controls plus Soil Stabilization
= An effective combination

BMP Installation - Sediment Controls
SC-3 Sediment Trap

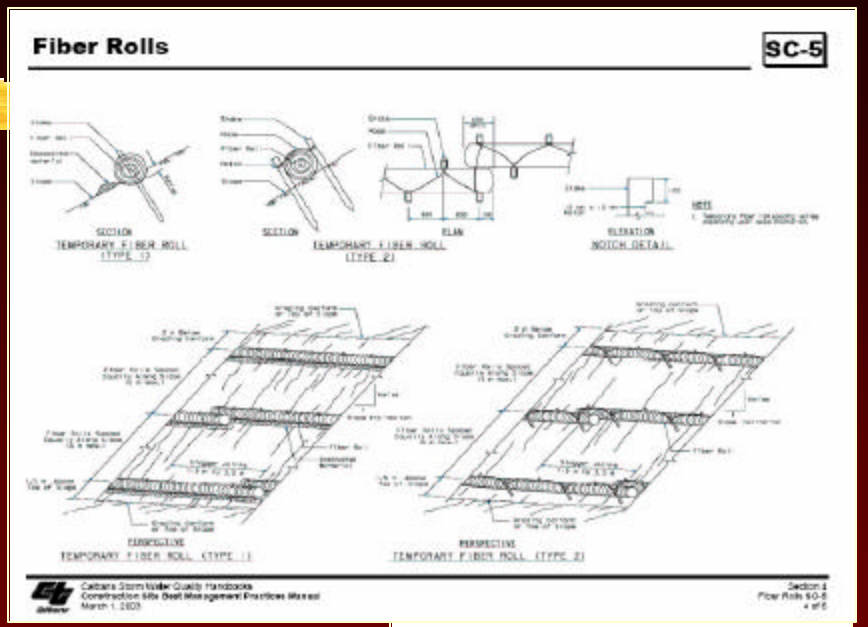
Requirements

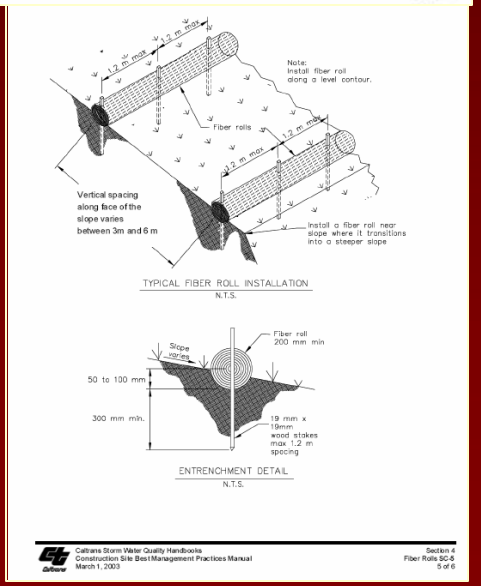
- Size limited by availability of right-of-way
- Not appropriate for drainage areas greater than 5 acres
- If captured runoff has not completely infiltrated within 72 hours dewater trap
- Fencing, in accordance with Standard Spec Section 80-"Fencing", shall be provided to prevent unauthorized entry

Sediment Trap without required fencing

BMP Installation - SedimentControls
SC-5 Fiber Rolls

Correct installation of fiber rolls

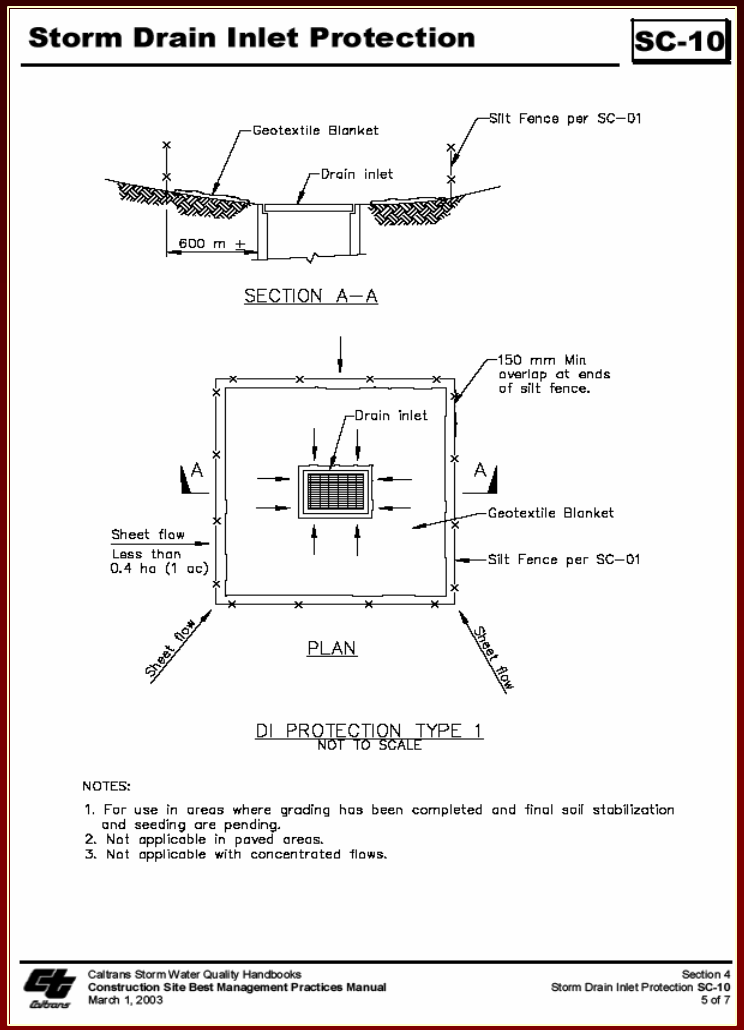




BMP Installation - Sediment Controls
SC-10 Storm Drain Inlet Protection

Caltrans Requirements

- Use where ponding will not encroach into highway traffic
- For use in areas where grading is complete
- Not for concentrated flows



Wind Erosion Control

ID	BMP Name
WE-1	Wind Erosion Control

BMP Installation - Wind Erosion Control WE-1

Soil binder applied via water truck

Caltrans Requirements

- Effectiveness depends on soil, temperature, humidity and wind velocity
- Temporary soil stabilizers and soil binders will also provide wind erosion control benefits

Tracking Control

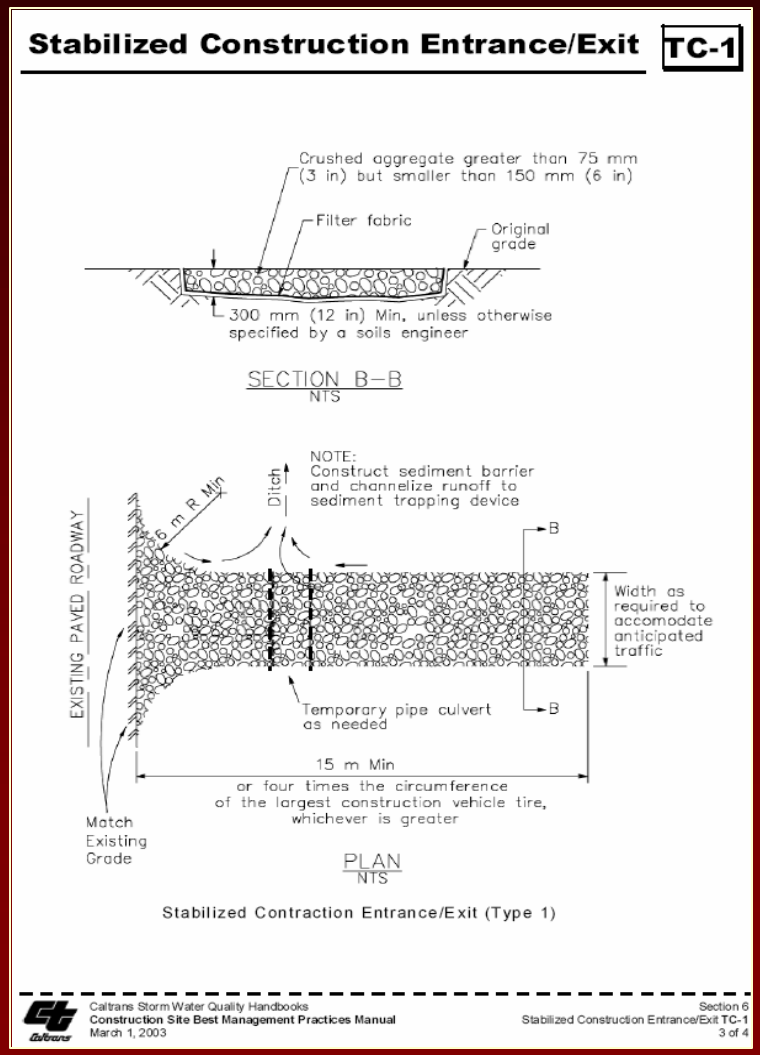
ID	BMP Name
TC-1	Stabilized Construction Entrance/Exit
TC-2	Stabilized Construction Roadway
TC-3	Entrance/Outlet Tire Wash

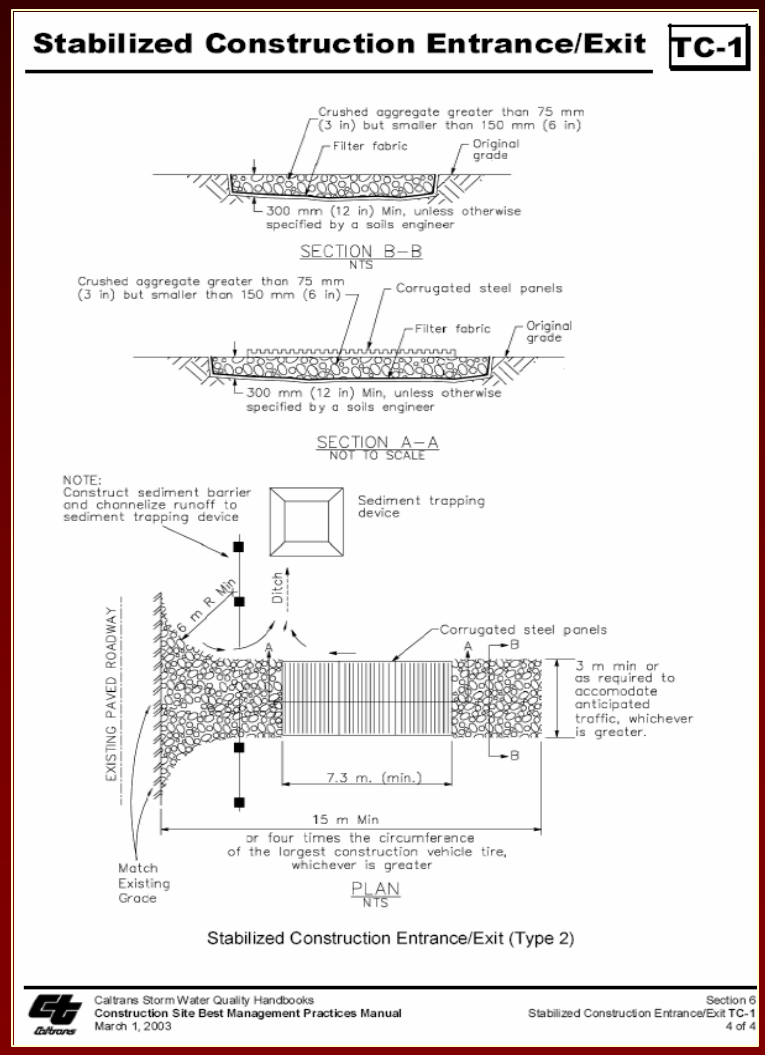
BMP Installation - Tracking Control
TC-1 Stabilized Construction Entrance / Exit

Lack of stabilized entrance / exit

BMP Installation - Tracking Control

TC-1 Stabilized Construction Entrance / Exit





Non-Storm Water Management BMPs

ID	BMP Name
NS-1	Water Conservation Practices
NS-2	Dewatering Operations
NS-3	Paving and Grinding Operations
NS-4	Temporary Stream Crossing
NS-5	Clear Water Diversion
NS-6	Illicit Connection / Illegal Discharge Detection and Reporting
NS-7	Potable Water / Irrigation

Non-Storm Water Management BMPs

ID	BMP Name
NS-8	Vehicle and Equipment Cleaning
NS-9	Vehicle and Equipment Fueling
NS-10	Vehicle and Equipment Maintenance
NS-11	Pile Driving Operations
NS-12	Concrete Curing
NS-13	Material and Equipment Use Over Water
NS-14	Concrete Finishing
NS-15	Structure Demolition/Removal Over or Adjacent to Water

BMP Installation - Non-Storm Water NS-2 Dewatering Operations

Caltrans Requirements

- Notify District Construction Storm Water Coordinator
- Use Caltrans' Field Guide to Construction Site Dewatering
- Use where groundwater or accumulated precipitation will be discharged from site
- Addresses sediment only
- Notify RE if pollutant other than sediment is present
- Must comply with applicable permits

BMP Installation – Non-Storm Water
NS-6 Illicit Connection / Illegal Discharge

Caltrans Requirements

- Can be in liquid or solid form
- Refers to discharges and dumping caused by parties other than contractor
- Inspect site before beginning of job
- Proceed with caution – notify RE, and CSWC at time of discovery

BMP Installation - Non-Storm Water

NS-9 Vehicle and Equipment Fueling

Caltrans Requirements

- Fuel on site only when impractical to go off site
- Use a designated area
- Clean up materials and spill kits available
- Protect fueling area from run-on and run-off

Mobile fueling operations require BMPs

Waste Management and Material Pollution Control BMPs

ID	BMP Name
WM-1	Material Delivery and Storage
WM-2	Material Use
WM-3	Stockpile Management
WM-4	Spill Prevention and Control
WM-5	Solid Waste Management
WM-6	Hazardous Waste Management
WM-7	Contaminated Soil Management
WM-8	Concrete Waste Management
WM-9	Sanitary / Septic Waste Management
WM-10	Liquid Waste Management

BMP Installation - Waste Management
WM-1 Material Delivery and Storage

Well maintained temporary containment facility

Substances that require storage in a containment facility

Caltrans Requirements

- Facility shall provide for a spill containment volume able to contain precipitation from a 24-hour, 25-year storm, plus 10% of the aggregate volume of all containers or 100% of the capacity of the largest container whichever is greater
- Facility shall be impervious to the materials for 72 hours

BMP Installation - Waste Management
WM-1 Material Delivery and Storage

Temporary containment facility for fuel

Caltrans Requirements

- Liquids, petroleum products, and substances listed in 40 CFR Parts 110, 117, and 302 require containment
- During rainy season provide permanent cover and side wind protection

BMP Installation - Waste Management
WM-3 Stockpile Management

Caltrans Requirements

- Year-round requirement
- Locate a minimum of 50ft (15m) away from concentrated flows of storm water, drainage courses, and inlets
- Protect from run-on with a perimeter sediment barrier

BMP Installation – Waste Management
WM-5 Solid Waste Management

Caltrans Requirements

- Solid waste includes litter generated by the public
- Dumpsters of sufficient size and number shall be provided
- Segregate potentially hazardous waste from non-hazardous waste
- Remove from site on a biweekly basis or as directed by the RE

BMP Installation - Waste Management
WM-8 Concrete Waste Management

Controlled concrete washout

Uncontrolled concrete washouts

BMP Installation - Waste Management
WM-8 Concrete Waste Management

Below Grade concrete washout

Above Grade concrete washout

Caltrans Requirements

- PCC and AC waste shall not be allowed to enter storm drains and watercourses
- Line all washouts with 10-mil polyethylene sheeting
- Install signs designating temporary washout areas
- Locate washout facilities a minimum of 15m (50ft) from storm drains, open drainage facilities, and water courses

BMP Installation - Waste Management
WM-9 Sanitary / Septic Waste Management

Locate temporary sanitary facilities away from drainage facilities

Caltrans Requirements

- Locate sanitary facilities away from storm drains, water courses
- Secure if subject to high wind
- Contractor to monitor weekly

Maintenance of BMPs

Maintenance of BMPs is a critical requirement for an effective water pollution control program

Water Quality Sampling and Analysis

- First things first
  - Caltrans personnel will not be collecting any samples – this is the responsibility of the contractor or their lab
  - Sampling and Analysis requirements apply only to SWPPP projects

Water Quality Sampling and Analysis

- Resolution 2001-046
  - San Francisco Bay Keepers lawsuit
  - Modification to California's General Construction Permit Monitoring and Reporting Section
  - Requires that permittees implement specific sampling and analytical procedures
  - Determine whether BMPs implemented on construction site are
    - Preventing further impairment of water bodies by sediment
    - Preventing other pollutants from causing or contributing to exceedances of water quality objectives

Water Quality Sampling and Analysis

- What are these new Sampling and Analysis requirements intended to do?
  - The new requirements are intended to determine if BMPs implemented on the construction site are effective for preventing sediment/silt and other non-visible pollutants from impacting water quality objectives

Water Quality Sampling and Analysis

Pollutants Requiring Sampling

Sediment

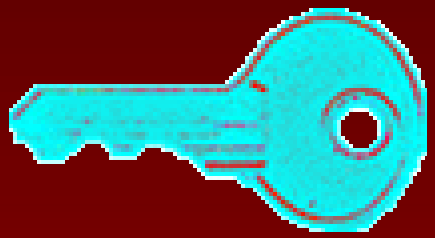
Non-Visible

Water Quality Sampling and Analysis

- Non-Visible Pollutants
  - They are not visually detectable in storm water discharges
    - Examples: Acids, Solvents, Lime, Gypsum, Copolymer
      - Toxic properties: Caustic, Carcinogenic, Flammable etc..

Water Quality Sampling and Analysis

- **Make sure potential non-visible pollutants are:**
  - **Cleaned-up**
  - **Covered**
  - **Contained**



- **C^3**

Construction Period Responsibilities

- Cover as topic item in pre-Construction meeting
- Review & approve plan
- Inspections - Caltrans self enforcement
- Request, review, & approve amendments for plan deficiencies

Construction Period Responsibilities

- Report illegal dumping
- Complete annual certificates (June 15th)
- Report non-compliance events to RE
- Complete Notice of Completion of Construction (NCC) at end of Construction

Inspections

- **Frequency**
  - **Prior to anticipated storm events**
  - **During extended storm events (once each 24-hour period)**
  - **After actual storm events**
  - **As specified in the Special Provisions**

Notice Of Discharge

- Action required upon discovery of a discharge or if the project receives a written notice or order from any regulatory agency

- Failure to report is subject to $32,500 fine

Notice Of Discharge

- **Applicable Discharges:**
  - **Storm water discharges that contain sediment from DSAs due to the absence of required, failed or damaged BMPs**
  - **Prohibited non-storm water discharges**
  - **Discharges that violate 404 permits or 401 certifications**

Inspection Form

Revised Storm Water Quality Inspection Checklist available in 2003 version of SWPPP Preparation Manual

http://www.dot.ca.gov/hq/construc/stormwater/sw_attachments/attachment_haddendum.doc

Special Provisions may require different form

Documentation

File Organization

- Category 20
- Inspections - Daily Reports
- Correspondence
- Certifications – Annual due June 15
- SWPPP / WPCP
- Amendments
- Photographs
- Notice of Completion
- Retain for Three Years